

Does the use of a closed system transfer device for administration with elastomeric pumps allow a safe disconnection?

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Background

Occupational exposure to cytotoxic drugs may cause adverse effects. Nurses may face exposure risk when disconnecting infusion lines, including elastomeric pumps (EP). Several recommendations relating to healthcare workers' safety support the use of Closed System Transfer Device (CSTD).

The aim of this study was to evaluate the contamination risk with and without use of a CSTD (Vygon-Qimono®).

Methods

Potential contamination when disconnecting infusion lines of EP (male Luer-lock) containing 5-fluorouracil from a female Luer-lock (LL) mimicking vascular access was monitored.

Different connections were evaluated:

- Group 1: EP/Male LL + Female LL
- Group 2: EP/Male LL + Needle-free connector
- Group 3: EP/Male LL + Qimomale® + Qimofemale®



During disconnection, potential leakage will contaminate the tissue mimicking patient's arm and the gloves used for protection. After disconnection, both end parts of the connection were cleaned with a wipe. **Wipe, gloves and tissue** were separately analyzed for contamination, using liquid chromatography.

Ten EP (Baxter-Folfusor®) were used for each group. All disconnections were performed by a trained nurse.

Results

Contamination is found for all pumps, but the level differs a lot. The highest contamination is measured on **wipes**. It is substantially lower on tissues and gloves (no difference among the three connections).

For wipes, a significant difference is found among the three connections ($p=0.007$). Median contamination is 50% lower for connection 3 (76 µg) compared to connection 1 (152 µg; $p=0.013$) and 44% lower compared to connection 2 (135 µg; $p=0.031$). There is no difference in contamination between the connections 1 and 2.

Conclusions

This was the first study to evaluate contamination risk at disconnection of EP. Qimono® significantly reduces the contamination risk, however it is impossible to evaluate the impact of remaining contamination since there is no knowledge about contamination levels inducing a risk for healthcare workers.

Qimono® is a CSTD allowing disconnection of EP, with respect to good practices, since it allows nurses to flush with a standard syringe.



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